

Patent claims

1. Acrylic sheet for use as non-transparent sound-deadening unit in noise barriers, where the
5 dimension of the sheet is 2 x 2 m or greater at a thickness of more than 8 mm, preferably more than 12 mm, and where threads, tapes, grids, or nets made from a material incompatible with the acrylic sheet have been embedded into the acrylic sheet to
10 bind splinters in the event of fracture of the sheet, characterized in that the proportion of fillers, based on the total weight of the sheet reduced by the weight of the embedded threads, tapes, grids or nets, is from 40 to 80 per cent by
15 weight.
2. Acrylic sheet according to Claim 1, characterized by a thickness in the range from more than 8 mm to 40 mm, preferably in the range from greater than
20 10 to 35 mm.
3. Acrylic sheet according to Claim 1 or 2, characterized by a thickness in the range from 12 to 35 mm.
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4. Acrylic sheet according to one or more of the preceding Claims 1 to 3, characterized in that the proportion of fillers, based on the total weight of the sheet, is in the range from 50 to 60 per
30 cent by weight.
5. Acrylic sheet according to one or more of the preceding claims, characterized by a substantially homogeneous distribution of the fillers in the
35 sheet.

6. Acrylic sheet according to one or more of the preceding claims, characterized in that the filler encompasses talc, dolomite, naturally occurring talc-and-dolomite intergrowths, mica, quartz, chlorite, aluminium oxide, aluminium hydroxide, clays, silicon dioxide, silicates, carbonates, phosphates, sulphates, sulphides, metal oxides, powdered glass, glass beads, ceramic, kaolin, porcelain, cristobalite, feldspar, and/or chalk.
7. Acrylic sheet according to one or more of the preceding claims, characterized in that the filler particles used are lamellar fillers.
8. Acrylic sheet according to one or more of the preceding claims, characterized in that the average particle size of the filler used is in the range from 0.01 to 80 μm , in particular in the range from 0.05 to 30 μm , very particularly advantageously in the range from 0.1 to 20 μm .
9. Acrylic sheet according to one or more of the preceding claims, characterized in that the filler is a talc-and-dolomite intergrowth, where appropriate in a mixture with aluminium hydroxide.
10. Acrylic sheet according to one or more of the preceding claims, obtainable by polymerizing a (meth)acrylate system in a casting process, preferably by the cell casting process or a modified form thereof, where the polymerizable system comprises:
- | | | | | | |
|----|-----|--|----|----------|---------|
| A) | a) | (meth)acrylate | 50 | - 100 | % by wt |
| | a1) | methyl (meth)-acrylate | 0 | - 99.99% | by wt |
| | a2) | C ₂ -C ₄ (meth)- | 0 | - 99.99% | by wt |

	acrylate			
a3)	$\geq C_5$ (meth)-	0	- 50	% by wt
	acrylate			
a4)	polyfunctional	0.01 -	50	% by wt
	(meth)acrylates			
b)	comonomers	0	- 50	% by wt
b1)	vinylaromatics	0	- 50	% by wt
b2)	vinyl esters	0	- 50	% by wt

where the selection of components a) and b) is such that together they give 100 per cent by weight of the polymerizable component A),

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B) for each 1 part by weight of A), from 0 to 12 parts by weight of a (pre)polymer which is swellable or soluble in A),

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C) initiator, its amount being sufficient to cure component A),

D) where appropriate, means of adjusting the viscosity of the system,

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E) conventional additives, their amount being up to 3 parts by weight for each 1 part by weight of A),

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and

F) from 0.33 to 4 parts by weight of fillers for each 1 part by weight of binder (entirety of A) to E)),

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and the viscosity of the (meth)acrylate system prior to the polymerization is greater than 0.1 Pa·s (greater than 100 cP).

11. Acrylic sheet according to one or more of the preceding claims 1 to 10, characterized in that, to bind splinters in the event of fracture, it has steel threads which have been embedded into the highly filled plastics matrix, and which, where appropriate, have a coating of plastic, preferably of plastic composed of polyamide.
12. Process for producing an acrylic sheet according to one or more of Claims 1 to 12, by
- a) providing a polymerizable, filled (meth)acrylate composition,
 - b) pouring the composition provided into a previously prepared mould in which have been positioned the threads, tapes, grids or nets intended to be embedded,
 - c) polymerizing the composition in the mould at a temperature above room temperature to give a sheet and
 - d) demoulding the sheet,
- characterized in that
- the viscosity of the polymerizable, highly filled (meth)acrylate composition is adjusted to a value greater than 0.1 Pa·s prior to the polymerization.
13. Process according to Claim 13, characterized in that the viscosity of the composition is regulated by varying the ratio by weight of (pre)polymer to polymerizable monomers in the composition.
14. Process according to Claim 13 or 14, characterized in that

the viscosity of the composition is regulated by varying the proportion of viscosity adjusters.

15. Use of an acrylic sheet according to the preceding
5 Claims 1 to 12 as non-transparent sound-deadening unit in noise barriers.